

REMARKS

With this response, applicants have amended claims 51, 54, 55, 69, 70, 74-76, canceled claims 1-50, 52, 53, 56-68, and 71-73, without prejudice, and have added claims 77-92. Thus, claims 51, 54, 55, 69, 70, 74-76 and 77-92 are presently pending. These claims are presented for reconsideration and allowance. Consideration and allowance of claims 51, 54, 55, 69, 70, 74-76 and 77-92 are respectfully requested.

STATUS OF CLAIMS

1) Claims 51, 54, 55, 69, 70 and 74-76 stand rejected under 35 U.S.C. § 103(a) as being obvious over the Wietrzynski, U.S. Patent No. 5,824,350, in view of Uratani, U.S. Patent No. 5,788,872.

2) Claims 77-92 are new.

SUMMARY OF INVENTION

DESCRIPTION OF THE PROBLEM SOLVED BY THE INVENTION

While many types of ejector pin designs have been tried, many with great commercial success, improvements nonetheless remain desirable. Nearly all commercially available ejector pins are of one-piece construction and have an enlarged head located at one end of an elongate generally cylindrical pin or barrel. The head is received in an ejector plate assembly that is driven by some sort of a drive arrangement to extend the free end of the pin into the mold and urge the part in mold free.

Given the present day dynamics of the industry, molding equipment variability, and the increased need for setup flexibility and customization, off the shelf one-piece ejector pins sometimes can be less than optimal in certain applications. For example, since commercially available ejector pins typically come in standard sizes, applications requiring a non-standard length can complicate things.

Being of one-piece construction, the ejector pin head cannot be cut to achieve the desired length without ruining the pin. Unfortunately, cutting the pin adjacent its free end is not without risk and complication. Since the pin is hardened at and adjacent the free end, it may not be

possible for the end user to cut the pin to length as they may lack the necessary equipment. Having the ejector pin manufacturer or reseller do so requires good communication with the end user to ensure it gets cut to the proper length. In either case, where cutting is done after hardening, distortion of the pin can occur and the newly cut free end may not be sufficiently square to ensure it will be completely flush with the mold when retracted during molding.

In addition, for ejector pins equipped with a marking device, such as a date stamp or the like, cutting at or adjacent the free end of a one-piece ejector pin is simply not an option. While Wietrzynski, U.S. Patent No. 5,824,350, discloses an ejector pin of two-piece construction that can be cut to length by cutting part of the pin shank off.

While a screw is used in Wietrzynski to attach its top plate 26, e.g., head, to the shank 12, e.g., pin or pin barrel, it disadvantageously lacks any kind of structure to prevent relative rotation between the plate 26 and the shank 12. As a result, mold cycling and the corresponding reciprocating ejector pin movement can cause the shank to rotate relative to the plate.

While this may not be a problem in some instances, it can be disadvantageous in other instances. For example, relative rotation can cause threads to strip, stress-induced cracking, and ejector pin failure. Even where these things do not occur, relative rotation can loosen the fastener which can cause a corresponding increase in the length of the ejector pin during molding. If this happens, the free end of the pin can protrude into the mold during molding leaving an unwanted pocket or indentation in the molded part (if not worse). Finally, even where the screw does not appreciably loosen, should the ejector pin be equipped with a marking device, the orientation of the mark it leaves will vary from part to part which may be unacceptable for certain applications.

Unfortunately, to correct any of these things, production must be stopped which typically is costly. Even in instances where only the screw must be tightened, the production delay can be considerable because it typically requires at least partial mold disassembly.

SOLUTION TO THE PROBLEM

The invention resides in the provision of a multi-piece ejector pin assembly that can not only be cut to length but which also will behave like a conventional one-piece ejector pin when assembled because the head and pin cannot rotate relative to one another. In one preferred embodiment, the ejector pin includes an elongate pin barrel, which preferably is of generally cylindrical construction, that mates with a head in a manner that opposes the barrel from rotating relative the head and vice versa. In addition, the head preferably is configured to mate with an ejector plate assembly in a manner that prevents the head, and hence the rest of the ejector pin, from rotating relative the mold during operation. As a result, rotary location of any indicia or the like disposed at or adjacent the ejector end of the pin is advantageously maintained during operation.

For example, in one preferred embodiment, the ejector pin head is non-rotatively coupled to the ejector pin barrel via a joint that includes at least one pair of mating locators. For example, Fig. 9 illustrates a locator surface formed in the ejector pin barrel that abuts with a complementary locator surface formed in the head to prevent each from rotating relative to the other. The end of the ejector pin barrel seats in a socket, such as preferably a recessed land, formed in the head that is defined by at least one sidewall bounding part of the outer sidewall of the ejector pin barrel.

STATEMENT OF ISSUES PRESENTED FOR CONSIDERATION

- 1) Whether claims 51, 54, 55, 69, 70 and 74-76 are properly rejected under 35 U.S.C. § 103(a) as being obvious over the Wietrzynski, '350 patent in view of Uratani, U.S. Patent No. 5,788,872.
- 2) Whether new claims 77-92 are presented in condition for allowance.

GROUPING OF CLAIMS

Claim 51 stands or falls separately.

Claims 54 and 55 stand or fall with claim 51.

Claims 69, 70 and 74-76 each stands or falls separately from one another.

Claims 77 and 78 stand or fall with claim 51.

Claim 79 stands or falls separately.

Claims 80-86 stand or fall with claim 79.

Claims 87-91 each stands or falls separately from one another.

Claim 92 stands or falls with claim 91.

ARGUMENTS SUPPORTING PATENTABILITY

The rejection of claims 51, 54, 55, 69, 70 and 74-76 as being obvious 35 U.S.C. § 103(a) when Wietrzynski is combined with Uratani is improper and therefore *must* be withdrawn¹

Claim 51

Claim 51 has been amended to more clearly define the ejector pin as being an ejector pin assembly because it includes an ejector pin head attached to an ejector pin barrel with a flat of the ejector pin barrel bearing against a straight portion of a sidewall of a recessed land formed in the ejector pin head opposing one from rotating relative to the other. A fastener is employed to attach the ejector pin head to the ejector pin barrel. The ejector pin barrel end opposite where it

¹ In view of the fact that the Examiner completely mischaracterized Wietrzynski, including because of an apparent misunderstanding of which end of ejector pin 10 gets mounted to the ejector plate system 48, it thereby necessitates any future rejection based on at least the Wietrzynski reference not be final. However, Applicant also assert the same applies with regard to Uratani. Therefore, Applicant expects the next communication to either be a Notice of Allowance or a *non-final* rejection. If the Examiner intends to issue a final rejection, Applicant requests the courtesy of contacting the undersigned beforehand to explain *why*.

attaches to the head is used to eject a molded component or part from the mold, such as when the ejector pin assembly is displaced in an ejection operation.

While Wietrzynski discloses an ejector pin having an elongate shank 12 attached to a top plate 26 (head) by a counter sunk screw 28, it is not done so in a way that opposes relative rotation between the shank 12 and top plate 26. In addition, Wietrzynski also fails to disclose a head having a recessed land and a recessed land sidewall because only a planar outer surface of its top plate 26 abuts the end of the shank 12 that receives the screw 28. Uratani does nothing to remedy at least these deficiencies as it does not even disclose an ejector pin, let alone any teaching or suggestion of components or structure that corresponds to these distinguished claim limitations. Therefore, for at least these reasons, the combination of Wietrzynski and Uratani does not disclose, teach or suggest each and every claim limitation as is required for a claim to be properly rejected under 35 U.S.C. § 103 necessitating withdrawal of this claim rejection.

In addition, the Examiner's characterization of Wietrzynski is incorrect. That structure identified by reference numeral 18 that the Examiner characterizes as being the ejector pin head is not the head. Rather, it is identified at col. 3, lines 40-43, of Wietrzynski as being "a marker unit, preferably a date stamp 18 ..." This is confirmed upon examination of Fig. 1 of Wietrzynski, which shows the head or top plate 26 of the ejector pin 10 captured between two plates of an ejector plate system 48 and the marker unit 18 located at the opposite end of the pin 10 in contact with an injection molding 32. As a result, marker unit 18 does not and simply cannot correspond in any way to the ejector pin head as it is defined in claim 1. Therefore, for this additional reason, the Examiner has failed to make a *prima facie* showing of obvious further necessitating withdrawal of this claim rejection.

Even apart from this, Applicant respectfully submits that it is nowhere apparent that the structure identified by reference numerals 14 and 18 disclose an anti-rotation arrangement, much less the *specific* relative rotation opposing arrangement recited in claim 1. First, as previously discussed, this structure is not ejector pin structure receivable in an ejector plate assembly of the mold because the ejector plate system 48 disclosed in Wietrzynski receives top plate 26, not marking unit 18 nor the bore 14 that telescopically receives the marking unit 18. Second, bore 14 is disclosed at col. 3, lines 42-44 as being "a stepped bore 14." Wietrzynski nowhere

discloses that it oppose rotation. In any event, no matter how it is configured, since bore 14 does not and simply cannot oppose relative rotation between top plate 26 and shank 12, it lacks correspondence to any claim limitation recited in claim 51 whether or not it opposes marking unit rotation.

Applicant wishes to point out some additional inconsistencies in the Examiner's characterization of the Wietrzynski reference in an effort to be accurate and further show why there has been a failure to make even a prima facie showing obviousness, necessitating withdrawal of this claim rejection. For example, ejector pin end region 42 is a region, not a recessed land as is inaccurately characterized on page 3 of the office action. In addition, col. 3, lines 11-15 of Wietrzynski simply describe an arrangement where an intermediate plate 46 is located above upper mold insert 34 and the displaceable ejector plate system 48 being located between the intermediate plate 46 and an upper platen 50. The terms "recessed land" "ejector pin barrel end" etc. stated on page 3 of the office action are nowhere found or even implied anywhere at col. 3, lines 11-15 of Wietrzynski. The same is true of the Examiner's characterization of col. 3, lines 50-65 of Wietrzynski, which instead is primarily directed to how the top plate (ejector pin head) 26 is attached to the ejector pin shank 12 using a countersunk screw 28. Applicant respectfully requests that the Examiner carefully review these and other characterizations of the prior art in the office action for accuracy and clarify in writing where corrections are required as I am sure the Examiner wishes to make every effort to ensure claim rejections are not based on mischaracterizations of prior art, etc.

Finally, Wietrzynski and Uratani are improperly combined. Wietrzynski already discloses an ejector pin equipped with a marker unit. Applicant respectfully submits one of ordinary skill in the art would have no reason to look to Uratani where the ejector pin disclosed in Wietrzynski is already equipped with a marker unit, i.e., marking device. It makes no sense. Assuming for argument's sake that somehow one of ordinary skill in the art would have looked to Uratani (which they wouldn't), they would have not have looked for long because Applicant respectfully submits that the marking device of Uratani could not be substituted for the marker unit of Wietrzynski, at least without significant modification (which may render it unworkable anyway). In any event, for the reasons set forth above, even if one can somehow assume for

argument's sake that Wietrzynski and Uratani can be properly combined, they do not collectively disclose each and every claim limitation recited in claim 51, which is required to sustain a rejection under 35 U.S.C. § 103. Therefore, for at least these additional reasons, claim 51 is believed presented in condition for allowance and its allowance is respectfully requested.

For at least these reasons, claim 51 is believed presented in condition for allowance and its allowance is respectfully requested.

Claims 54-55

Claims 54 and 55 are believed presented in condition for allowance because each ultimately depends from independent claim 51, a claim believed to be presented in condition for allowance for at least the reasons set forth above.

Claim 69

Claim 69 has been amended to recite in the preamble that the claimed invention is directed to an ejector pin assembly. Claim 69 is otherwise believed presented in condition for allowance because neither Wietrzynski nor Uratani, alone or in combination, disclose, teach or otherwise suggest, among other things, an ejector pin assembly having a head with a locator flat that mates with a locator flat of the barrel to not just oppose relative rotation between the head and barrel, but prevent rotation. For at least these reasons, claim 69 is presented in condition for allowance and its allowance is respectfully requested.

Claim 70

Claim 70 also has been amended to recite in the preamble that the claimed invention is directed to an ejector pin assembly. Claim 70 is otherwise believed presented in condition for allowance because neither Wietrzynski nor Uratani, alone or in combination, disclose, teach or otherwise suggest, among other things, mating locator surfaces that oppose relative rotation between an ejector pin head and ejector pin barrel where the head was attached to the barrel by a fastener. For at least these reasons, claim 70 is presented in condition for allowance and its allowance is respectfully requested.

Claim 74

Claim 74 also has been amended to recite in the preamble that the claimed invention is directed to an ejector pin assembly. Claim 74 is otherwise believed presented in condition for allowance because neither Wietrzynski nor Uratani, alone or in combination, disclose, teach or otherwise suggest, among other things, a ring with projections engaging the head and barrel to oppose relative rotation between the head and barrel. For at least these reasons, claim 74 is presented in condition for allowance and its allowance is respectfully requested.

Claim 75

Claim 75 also has been amended to recite in the preamble that the claimed invention is directed to an ejector pin assembly. Claim 75 is otherwise believed presented in condition for allowance because neither Wietrzynski nor Uratani, alone or in combination, disclose, teach or otherwise suggest, among other things, an ejector pin head with arms that clamp around a threaded section of an ejector pin barrel, let alone that do so using a fastener that engages the arms. For at least these reasons, claim 75 is presented in condition for allowance and its allowance is respectfully requested.

Claim 76

Claim 76 also has been amended to recite in the preamble that the claimed invention is directed to an ejector pin assembly. Claim 76 is otherwise believed presented in condition for allowance because neither Wietrzynski nor Uratani, alone or in combination, disclose, teach or otherwise suggest, among other things, the claimed elements, including their arrangement that achieves opposition of relative rotation between the ejector pin head and ejector pin barrel.

NEWLY ADDED CLAIMS

Claims 77-78

Claims 77 and 78 both ultimately depend from independent claim 51, a claim believed presented in condition for allowance. In addition, each of these claims independently recites patentable subject matter in addition to that recited in any intervening claims, including claim 51.

Claim 79

Independent claim 79 is respectfully submitted to be in condition for allowance because, among other things, the Wietrzynski patent, whether taken alone or in combination with any other reference, including Uratani, fails to disclose, teach or suggest a buildable ejector pin assembly with an ejector pin head to which an ejector pin barrel mounts so as to oppose relative rotation between them and that also is mountable in an ejector plate assembly so as to oppose relative rotation between it and the ejector plate assembly. The claimed invention advantageously produces an ejector pin assembly that keeps any insert, e.g. marker unit, indicia imprinter, vent grate, or the like, from rotating during mold operation. By the claimed invention producing an ejector pin assembly constructed and arranged to oppose relative rotational movement between the head and ejector plate assembly and between the head and pin barrel, undesired rotation of the insert at the free or ejector end of the pin barrel is minimized, if not outright completely prevented, advantageously maintaining any desired angular or rotational location relationship between the insert and/or the mold or component being molded. Since the ejector pin arrangement disclosed in Wietrzynski fails to disclose, teach or suggest not just the recited claim elements of the claimed invention but also its advantages as well, Applicant requests the Examiner find that this claim recites allowable subject matter by allowing this claim.

Claims 80-86

Claims 80-86 both ultimately depend from independent claim 79, a claim believed presented in condition for allowance. In addition, each of these claims independently recites patentable subject matter in addition to that recited in any intervening claims, including claim 79.

Claim 87

Independent claim 87 is respectfully submitted to be in condition for allowance because, among other things, the Wietrzynski patent, whether taken alone or in combination with any other reference, including Uratani, fails to disclose, teach or suggest an ejector pin assembly including a head with a non-circular outer sidewall opposing relative rotation between the head and an ejector plate assembly to which the ejector pin assembly is mountable. The references of record also fail to disclose, teach or suggest the head having a non-circular seat that receives a non-circular pin barrel end defining a relative rotation opposing joint. For example, the ejector plate system 48 disclosed Wietrzynski has no provision or structure that opposes the top plate 26 of the ejector pin 10 from rotating relative to the plate system. In further support of this, as is clear from the drawing figures in Wietrzynski, the top plate 26 of the ejector pin 10 has no rotation opposing structure whatsoever. This also means that the top plate 26 lacks any structure corresponding to the “non-circular seat” required by claim 87. Finally, consistent with this, Wietrzynski fails to disclose, teach or suggest any non-circular structure arrangement that provides opposition to relative rotation between the head and pin barrel. Because of at least these reasons, Applicant requests newly presented claim 87 be allowed.

Claim 88

Independent claim 88 is respectfully submitted to be in condition for allowance because, among other things, the Wietrzynski patent, whether taken alone or in combination with any other reference, including Uratani, fails to disclose, teach or suggest an ejector pin assembly that includes any relative rotation preventing D-shaped structural arrangement, let alone anything corresponding to those structures and arrangements recited in claim 88. For at least these reasons, Applicant requests newly presented claim 88 be allowed.

Claim 89

Independent claim 89 is respectfully submitted to be in condition for allowance because, among other things, the Wietrzynski patent, whether taken alone or in combination with any other reference, including Uratani, fails to disclose, teach or suggest an ejector pin assembly that includes any relative rotation opposing D-shaped structural arrangement, let alone anything

corresponding to those structures and arrangements recited in claim 89. For at least these reasons, Applicant requests newly presented claim 89 be allowed.

Claim 90

Independent claim 90 is respectfully submitted to be in condition for allowance because, among other things, the Wietrzynski patent, whether taken alone or in combination with any other reference, including Uratani, fails to disclose, teach or suggest an ejector pin assembly that includes any relative rotation opposing D-shaped structural arrangement, let alone anything corresponding to those structures and arrangements recited in claim 90. For at least these reasons, Applicant requests newly presented claim 90 be allowed.

Claim 91

Independent claim 91 is respectfully submitted to be in condition for allowance because, among other things, the references of record, including Wietrzynski and Uratani, fail to disclose, teach or suggest the combination of claim limitations recited. For example, neither reference discloses any kind of a fixed splined type fixed non-rotary joint of the type and structure claimed. For at least these reasons, Applicant requests newly presented claim 91 be allowed.

Claim 92

Claim 92 is believed allowable because it ultimately depends from independent claim 91, a claim believed presented in condition for allowance. In addition, this claim independently recites patentable subject matter in addition to that recited in any intervening claim(s), including claim 91.

CONCLUSION

The presently pending claims set forth above are all believed presented in condition for allowance and their allowance is respectfully requested.

As an aside, it should be noted that claim 51 does not require any kind of marking device or marker unit as none is recited in claim 51. Applicant also notes that the Examiner has listed the factual inquiries set forth in *Graham v. John Deere* in the office action, which are applicable in determining obviousness. Applicant requests the Examiner provide a supporting paragraph for each of the *Graham* factors 1.-4. actually applying these factors for each obviousness rejection made in the future, should this case somehow not be allowed. Moreover, Applicant hereby expressly requests on the record for the Examiner to expressly show how any future multiple reference based obviousness-type claim rejections are based on properly combinable references by identifying expressly in the reference itself where each corresponding reference provides disclosure, teaching or suggestion adequate to support the purported combination. Doing so will go along way to avoid the Applicant, a sole inventor, from having to continue to expend unnecessary resources in the future.

Applicant hereby requests a three-month extension of time from May 24, 2005 until August 24, 2005 and encloses a check in the amount of the requisite \$510 small entity fee to pay for the extension. In addition, the Director is authorized to charge an additional \$400 for the cost of adding four (4) independent claims beyond the number of independent claims and total number of claims Applicant previously paid for, all for a small entity.

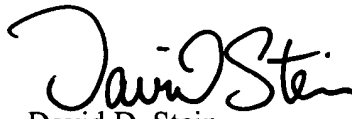
No other fees are believed to be due with the submission of this communication. Nevertheless, the Director is authorized to direct any additional fees associated with this or any other communication, or credit any overpayments to Deposit Account No. 50-1170.

Serial No. 10/021,770 to Klaus WIEDER
Art Unit: 1722

Reply to Office Action of March 19, 2004
Confirmation No. 3922

Applicant believes the application is now in condition for allowance and such action is earnestly requested. Should the Examiner have any questions or comments, the attending to of which would expedite prosecution of this application, the Examiner is invited to contact the undersigned at the telephone number appearing below.

Respectfully submitted,


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